REMARKS

Claims 1-86 are currently pending in the application. Claims 1-42 were rejected. Claims 18-20 and 36-38 were objected to. Claims 1, 21 and 39 have been amended. Claims 43-86 have been canceled without prejudice.

The Applicant hereby affirms the election to proceed with claims 1-42 made by the undersigned in the telephone conversation of May 24, 2004. Accordingly, the Applicant requests cancellation of claims 43-86 without prejudice, and reserves the right to pursue these canceled claims and any other claims supported by the present specification in related applications.

The Examiner rejected claims 1-42 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner stated that the following were not sufficiently described in the specification:

1 – the relationship between pairs of object in the said first knowledge, or in the first and second knowledge.

2 – where the first and second knowledge bases reside on the first or second or separate computer.

3 – it's unclear what algorithm is used to answer or process the user query in Fig. 8, 810 the knowledge inference system, 812, Dumb and smart generator, and 814 Natural language translation system.

The rejection is respectfully traversed.

With regard to the Examiner's first point, independent claims 1, 21 and 39 each refer to at least one or a "knowledge base having data stored therein representing first knowledge about a plurality of objects using a plurality of relationships between pairs of the objects." An exemplary implementation of such a knowledge base is described in the present specification beginning at line 20 of page 10. The nature of objects is described in pages 10-15. The nature of the relationships between the objects is described in pages 15-24. A summary of these basic

concepts is provided beginning at line 15 of page 24. The Applicant respectfully submits that this detailed description which provides a number of clear examples provides sufficient detail to enable one of ordinary skill in the art to implement the recited knowledge base.

With regard to the Examiner's second point, the Applicant respectfully requests clarification of the Examiner's objection, and identification of the specific claims to which the objection applies. None of currently pending claims 1-42 specifically refers to a "second knowledge base" residing on a "separate computer." On the other hand, the specification does refer to embodiments in which a knowledge base or multiple knowledge bases may be distributed among computers on a network (e.g., the Internet). An example of such an embodiment is described in the specification beginning at page 56, line 14, and with reference to Fig. 9. Hopefully this information will address the Examiner's concerns. Otherwise, the Applicant requests additional information.

With regard to the Examiner's third point, the present specification clearly describes and enables exemplary algorithms for processing user queries. The description of Fig. 8 beginning at page 56, line 1, refers to an exemplary system implemented on a single machine on which "all the knowledge is stored locally." As stated, query processing system 806 "answers queries in internal format using knowledge stored in knowledge base 808 and also knowledge inferred by the knowledge inference system 810. The knowledge inference system infers new knowledge with the help of a store of generators 812. This stand-alone embodiment also includes a natural language translation system 814 which translates natural language by referring to a store of translation templates 816."

The nature of queries, and the generation and processing of queries are described beginning at page 26, line 5. The role played by so called "smart" and "dumb" generators in the generation and processing of queries, and in the inference of new knowledge in responding to queries is described beginning at page 33, line 6. Finally, the role played by translation systems

and the nature of translation templates are described beginning at page 39, line 9. The Applicant respectfully submits that these descriptions are more than adequate to provide one of ordinary skill in the art with the appropriate amount of information to implement the claimed invention. Moreover, the present application has been filed with a computer program listing appendix (see page 1) in which code for implementing such algorithms is explicitly described.

In view of the foregoing, the rejection of the claims under 35 U.S.C. 112, first paragraph, is believed overcome.

The Examiner rejected claims 1, 2, 4-17, 21-35, and 39-42 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,263,335 (Paik). The Examiner also rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Paik in view of U.S. Patent No. 5,809,493 (Ahmed). The Examiner referred specifically to columns 5 and 6 of Paik as disclosing the invention as recited in independent claims 1, 21 and 39. Claims 1, 21 and 39 have been amended to more clearly describe the invention and the rejections are respectfully traversed.

Paik describes an "information extraction system that allows users to ask questions about documents in a database," which "automatically builds its own subject knowledge base," and can dynamically "acquire new knowledge and add it to the knowledge base by automatically identifying new names, events, or concepts." See Abstract. According to Paik, the system "allows the expression and clarification of complex query statements and the retrieval and display of relevant information from documents using natural language processing (NLP) techniques." Column 4, line 66 to column 5, line 2. The system extracts information from news articles and news feeds and creates chronologically ordered summaries of such articles and news items which may then be retrieved either in response to user queries (e.g., Who-What-When-Where-Why-How (W-H) questions), or the browsing and selection of hyperlinks in representations of the summaries themselves. Column 5, lines 3-13.

Paik indicates that his system "goes beyond document boundaries to extract and

summarize the contents of an entire collection of documents," aggregating "information across document boundaries." Column 5, lines 41-44.

In column 6, Paik defines several terms used in the specification. In particular, Paik provides:

> Semantic Network: a knowledge representation in which "knowledge is represented by a labelled, directed graph whose nodes represent concepts and/or objects and whose arcs represent relationships between these objects and concepts" (from Encyclopedia of Artificial Intelligence (ed. by Stuart C. Shapiro, John Wiley & Sons: New York, 1990, p. 885)).

and

> Case frame, case grammar: In case grammar, the verb is regarded as the most important part of the sentence, and has a number of semantic relations with various noun phrases. These relations are called cases. Examples of cases are instrumental (the object used to perform an action), agentive (performer of an action), or dative (receiver of the action).

The Examiner referred to the definition of the Semantic Network as anticipating the first computer program instructions of claim 1, and the definition of case frame and case grammar as anticipating the second computer program instructions. The Applicant respectfully disagrees.

Paik does not describe a system which is operable "in response to a query having a predetermined format" to "infer second knowledge not represented in the at least one knowledge base" from "first knowledge" which is represented in the at least one knowledge base as recited in claim 1. Merely because the information extraction techniques described in Paik go "beyond document boundaries," it does not follow that inferences are being made from the information stored in the knowledge base in response to a query to generate knowledge not previously represented. To the contrary, as described in column 5, Paik processes each document or news item received *prior* to and as a condition precedent to its inclusion in the document knowledge base, and *prior* to responding to any queries which might correspond to the document. See

column 5, lines 41-51. Thus, Paik's processing is not with reference to information represented in the knowledge base, but with reference to information which is yet to be represented. Secondly, Paik's processing is not done in response to queries, but as part of the process of summarizing and including documents in the database which can *subsequently* be returned in response to a query.

As described in the present specification at page 33, line 7, "[f]ar more facts exist than can be stored statically. For this reason inference is an important feature of the preferred embodiment." That is, because embodiments of the invention are intended to be able to represent as much of the corpus of human knowledge as possible, an inference capability which dynamically infers information not represented in the system in response to queries is important to avoid the necessity of statically storing all such inferences.

By contrast, the efficacy of Paik's system is predicated on the fact that the information it extracts which "goes beyond document boundaries" must be stored in the document knowledge base. While such an approach may practicable in a system in which the items being summarized and retrieved are a relatively small set of documents, it would break down if a much wider variety of factual knowledge were to be represented as is possible with embodiments of the present invention.

In view of the fact that Paik does not describe a system in which knowledge not represented in a knowledge base is inferred from knowledge which is stored in the knowledge base in response to a query, the rejection of claims 1, 21 and 39 over Paik is believed overcome. In addition, the rejection of any claims dependent on claims 1, 21 and 39 is believed overcome for at least the reasons discussed.

The Applicant respectfully acknowledges the Examiner's indication of allowable subject matter in claims 18-20 and 36-38. However, in view of the foregoing, these claims are believed allowable in their present form without amendment.

In view of the foregoing, Applicant believes all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (510) 843-6200.

Respectfully submitted,
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